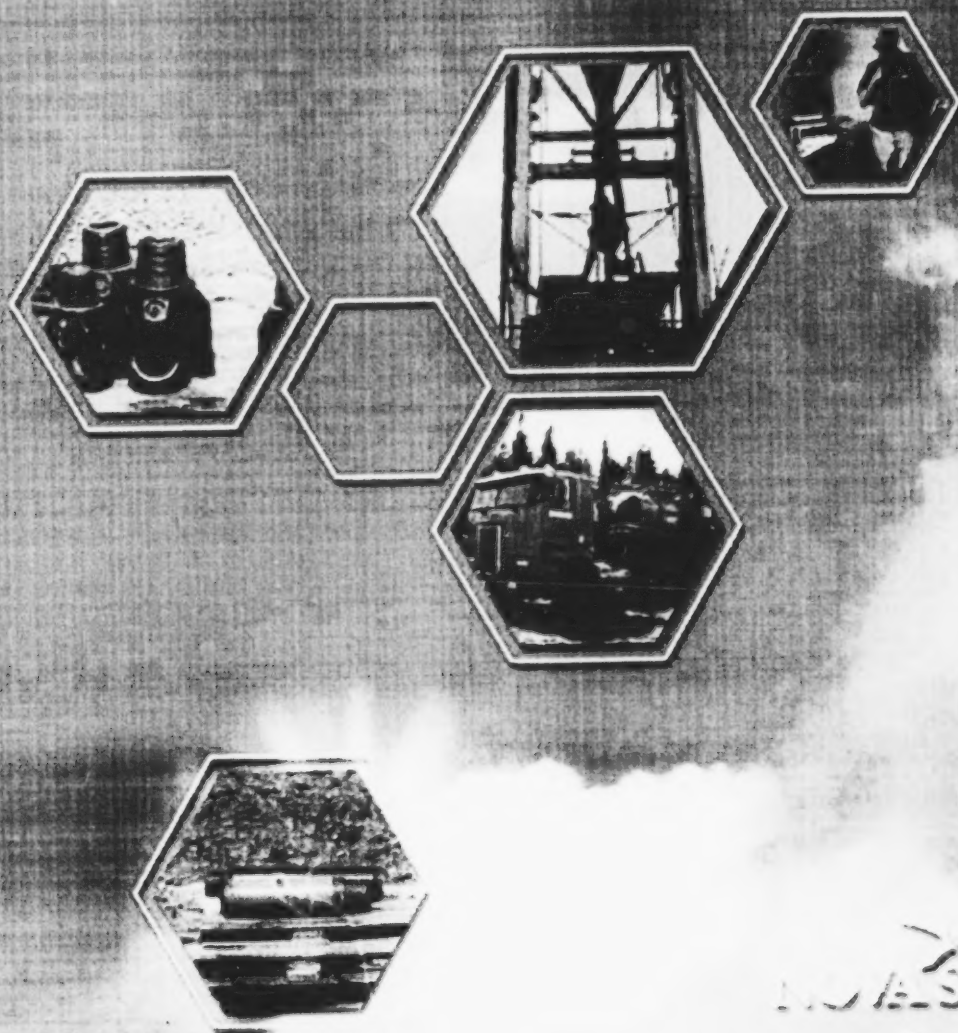
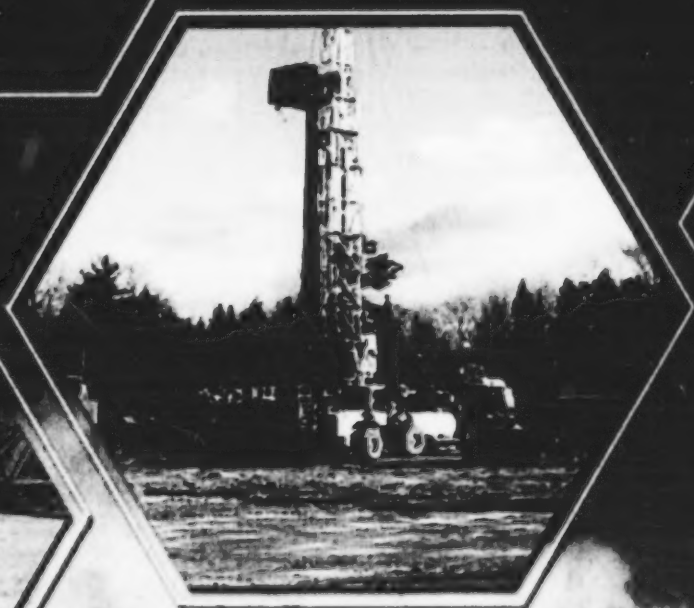
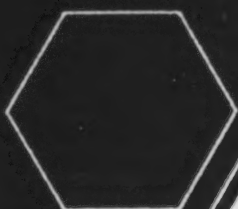
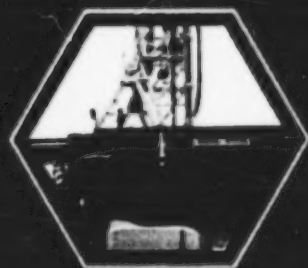


Nova Scotia Prospect Profile Onshore 2005



NOVA SCOTIA
Energy



Introduction

Introduction

Over the past five years, onshore petroleum exploration in Nova Scotia has continued to increase. The establishment of petroleum based infrastructure as a result of offshore production, including the construction of an inter-provincial pipeline which carries gas to local markets and to the north-eastern United States, and the success in the Corridor Resources' McCully gas field in New Brunswick; have caught the attention of a number of companies that see the potential for new exploration opportunities in Atlantic Canada.

All four Atlantic Provinces are continuing to award onshore rights and exploration activities will result in additional wells being drilled. While the activity level is quite modest by any comparison to western Canada, this frontier region is gaining considerable interest.

Based upon exploration commitments and announced plans, the Nova Scotia Department of Energy is forecasting two wells and four seismic programs to be completed onshore by the end of 2005. Add this to the nine wells which have

been drilled since 1999 and over 1,000 kms of new seismic which has been acquired, it's clear there is a resurgence in onshore activity. This is especially true when you compare previous activity peaks of three wells drilled in 1983, two in 1988, and seven coalbed methane wells drilled between 1994 and 1996.

From the Calls for Exploration Proposals during 2003, 2 blocks were awarded. During 2004 there were two additional Calls which resulted in acceptable bids being received on four additional blocks. Currently, there are ten conventional exploration agreements plus two coal gas agreements held by industry. These agreements cover 1.2 million hectares of land, with work commitments in excess of \$14 million over the next two to three years.

The year 2004 stands out as a landmark year for onshore activity as the first 3-D seismic survey was completed and the first horizontal well to test economic volumes of coalbed methane was also undertaken.

The Nova Scotia Department of Energy

The Nova Scotia Department of Energy (DOE) promotes, supports and coordinates, administers, and gives policy advice on the development of a prosperous, clean, efficient, and sustainable energy industry in Nova Scotia.

Our mission is to help Nova Scotians build a better future by ensuring responsible resource management of Nova Scotia's energy resources, and by maximizing financial, economic, industrial, and employment benefits that flow from the development and use of energy resources.

The Department is responsible for the development of policy, legislation, and regulations

for the development of the province's offshore and onshore petroleum resources, which includes the administration of the royalty regulations and agreements. In the onshore, the Department administers the granting of petroleum rights and coordinates the regulation of exploration activity.

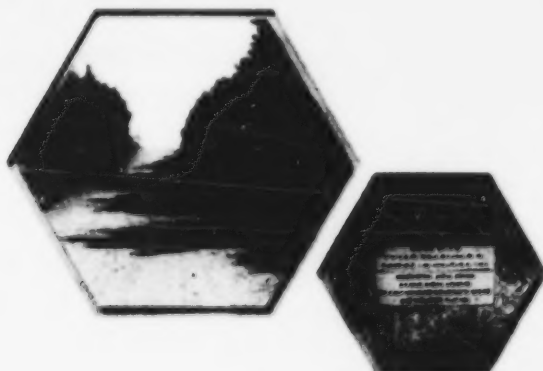
The Canada-Nova Scotia Offshore Petroleum Board regulates the day-to-day offshore petroleum activity while the Department promotes Nova Scotia's offshore and onshore potential around the world.

Visit our website at www.gov.ns.ca/energy for additional information.



Lands Nominated by Industry

- Competitive call for bids
- Open for 60 days (minimum)
- Up to 9-year (conventional) and 10-year (coalbed methane) terms



Land Tenure

The Nova Scotia Department of Energy is responsible for the administration of petroleum resources in the onshore area. The *Petroleum Resources Act* and the *Petroleum Resources Regulations* provide for the allocation and management of petroleum rights which are issued either as exploration or production agreements, each with different periods of tenure.

Petroleum located in or under Nova Scotia lands is deemed to be vested to the Crown. There are no free-hold petroleum rights in Nova Scotia. In addition, coal gas (coalbed methane) is currently issued as a separate right with a different tenure period and applicable royalty.

Call for Bids

Lands may be nominated by industry at any time which generally result in a competitive Call for Exploration Proposals. The Department of Energy reviews the requested parcel(s) and may modify the original parcel size and configuration in consultation with the company that has made the nomination. Public notice is given for a Call for Exploration Proposals in the Royal Gazette, posted in industry media, and through direct mailings.

The Call remains open for a minimum period of 60 days during which proposals must be filed. Applicants must submit a bid based on work commitment, information sufficient to judge their technical and financial capability, evidence of past experience in exploration, a commitment to meet or exceed minimum work expenditures and indicate their ability to post a bond to guarantee the performance of all work obligations.

Award of Rights

Petroleum rights may be granted to the applicant submitting the best proposal of work providing all other criteria have been met. The exclusive right to explore is conveyed by an Exploration Agreement which is a contractual agreement between the applicant and the Minister of Energy.

The award is made following the filing of various required documents, certificates, etc.

Work Based Continuance

For a conventional petroleum right, at least one well must be drilled in the initial three-year period. Two renewals of three years each are available for lands which continue to be explored. Coal gas rights are issued for an initial period of five years with a single, work-based, renewal for an additional five years.

A Production Agreement (Lease) for either hydrocarbon type may be issued by the Minister in response to the filing of an acceptable development program. The lease is for a term of 10 years with further renewals upon such terms and conditions as may be prescribed.

Royalties

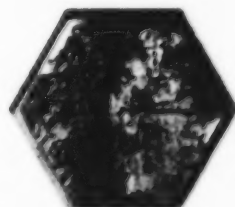
Royalties are set to encourage activity and be competitive with neighbouring jurisdictions. For conventional oil and gas, there is a two-year royalty holiday after which royalty is paid at a rate of 10% of the petroleum that is produced in each month. Coal gas royalty is set at 5% of the gas produced in each month and is based on the fair market value of the gas. There is no royalty holiday for coal gas.

Geological Setting



Onshore Stratigraphic Column

AGE		GROUP
Carboniferous	Permian	Pictou
	Stephanian	
	Westphalian	Cumberland
	Norman	
	Visean	Windsor
	Tournaisian	Horton
Devonian	Late	
	Middle	
	Early	Basement



Geological Setting

The Maritimes Basin is a very large depocenter comprised of a series of very thick continental and marine sediments of the Upper Paleozoic (Carboniferous) extending over 155,000 km² covering portions of the Atlantic provinces.

Carboniferous sediments, first deposited in narrow elongate basins are bordered in the northwest by uplands in New Brunswick and to the south by an uplifted region of pre-Carboniferous rocks in Nova Scotia.

The prospective Carboniferous sediments cover 1.9 million hectares, approximately one-third of the 'onshore' Nova Scotia region, which is comprised of the actual land mass of the province together with certain submarine areas not subject to the Canada-Nova Scotia Offshore Petroleum Board's jurisdiction.

Conventional petroleum exploration activity is focused on two key rock units; the Horton and Windsor Groups, and a younger unit that is of interest to coalbed methane explorers; the Cumberland Group.

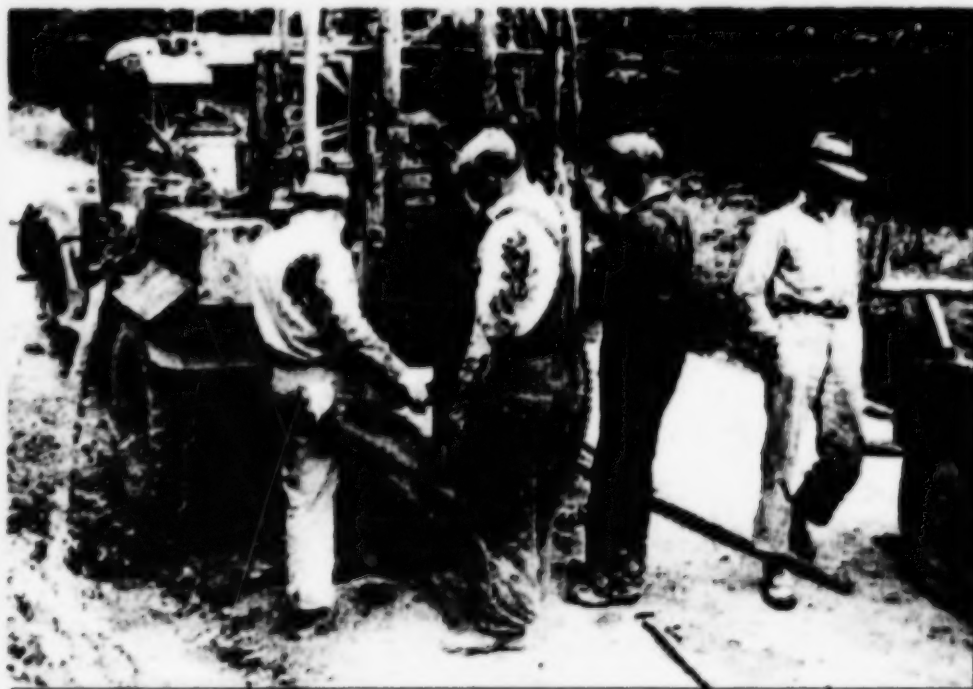
Fluvial and lacustrine sediments comprise the Horton Group and consists of red to grey sandstone, conglomerate, siltstone and shale, which can be up to 3,000 metres thick. Historical seeps and shows, coupled with drilling have demonstrated the presence of both oil and gas in the thick, clean clastic units of this Group. High organic lacustrine shales within this Group are the identified source rocks.

Overlying the Horton Group strata are younger rocks of the Windsor Group which represents the only marine incursion in the central Maritimes Basin. The unit varies in thickness from a few meters to greater than 1500 meters and consists of massive to poorly bedded clastics which are interbedded with thick deposits of gypsum, anhydrite, and tabular sequences of limestone and dolomite. Thick salt deposits occur at a number of localities and have caused noticeable deformation forming diapirs, domes and ridges. Carbonate banks and reefal build-ups have been the focus of successful base metal mining. In most instances the reefal facies are known to exhibit hydrocarbon shows and seeps.

The Cumberland Group (up to 4,000 metres in thickness) contains appreciable amounts of mineable coal seams and non-marine red and grey clastics including conglomerates. During the deposition of the upper part of the Cumberland Group, non-marine fluvial and fluvio-lacustrine red and grey clastics including conglomerates of the Pictou Group were deposited in other areas. The Pictou sediments unconformably overlie older Paleozoic rocks and onlap the older metamorphic basement rocks.

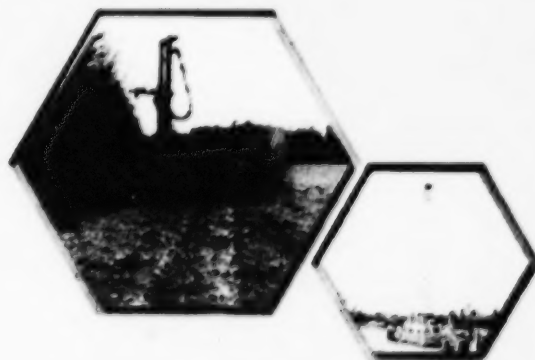
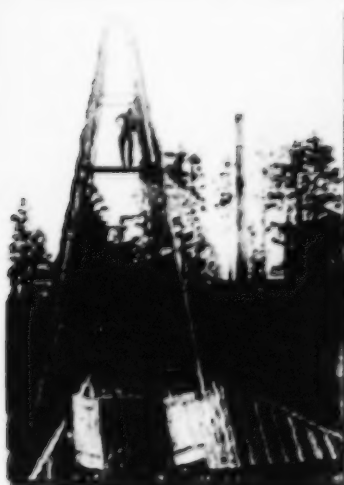
Although no commercial discoveries have yet been made onshore Nova Scotia, the success in New Brunswick bodes well for future discoveries in Nova Scotia. New Brunswick boasts two commercial discoveries; the Stoney Creek Field which produced oil and gas from 1909 until 1991 and the recent McCully Field discovery which is currently producing 2 MMcf/d from two wells. Both discoveries are in the Horton Group equivalent rocks found throughout northern and central Nova Scotia. New seismic coverage in various basins/sub-basins in Nova Scotia shows more clearly the effect and control provided by faulting in these play areas. New targets for both the Horton and Windsor units have been identified and mapped and need only to be drilled to verify their potential.

Activity



130 years of exploration

- 120 wells drilled (only 27 went > 1,000m)
- 9 wells in past 5 years
- Over 1,000 km of seismic in past 5 years
- First 3-D seismic survey and horizontal well in 2004



Activity: Past - Present - Future

Historical Background

Nova Scotia has drilling records dating back to 1869 during which time a number of wells were drilled near Lake Ainslie on Cape Breton Island. Oil seeps along the shores of the lake and numerous shows and flows in wellbores have resulted a number of shallow wells being drilled over the last 130 years. Small quantities of oil have been recovered for analysis and testing but no commercial production has been established.

1869 - the first well drilled onshore by Lake Ainslie Oil and Salt Company on the west side of Lake Ainslie. It flowed small amounts of oil and natural gas.

1909 - the discovery of the Stoney Creek oil and gas field in New Brunswick spurred more activity in Nova Scotia where the rocks units are the same.

1978-81 - Chevron Standard discovers oil in the Malagawatch area, Cape Breton while conducting a base metals program targeting the Windsor carbonate build-ups.

1987 - an uncontrolled flow of gas lasted for a period of three weeks in a shallow well in central Nova Scotia near Truro.

Of the approximately 120 wells drilled specifically for oil and gas and only 27 were drilled deeper than 1,000 metres and 41 went less than 200 metres. There have been shows in on third of these wells in addition to shows in another 66 mineral boreholes.

Recent Years

A resurgence of activity in recent years has occurred with more companies vying for land positions in the onshore region. This may be attributable, in part, to discoveries in New Brunswick and offshore development which has created onshore pipeline infrastructure.

These factors make potential onshore developments more economically feasible.

2000 - fifteen exploration agreements held by four exploration companies.

2000 - Corridor discovered the McCully Field in New Brunswick, currently producing 2 MMcf/d from the Horton Group.

2001 - the highest level of activity with 550 km of seismic acquired and five wells drilled by Northstar Energy/Devon Corporation.

2002 - one well drilled and five seismic programs acquired.

2003 - three Calls for Exploration Proposals at industry's request. Four seismic programs and two exploratory wells drilled.

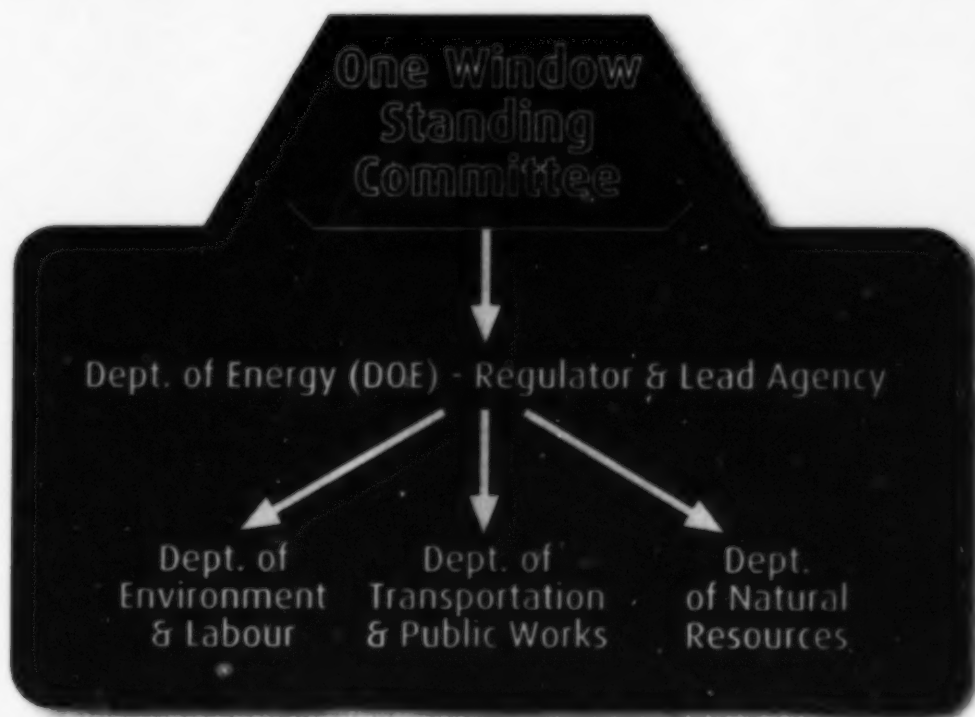
2004 - two Calls for Exploration Proposals resulted in the awarding of four parcels of land. Nova Scotia's first horizontal well was undertaken while the first 3-D seismic survey was completed.

2005 - an additional Call could be issued, two wells drilled and up to four seismic programs could be completed.

In the last five years, a total of nine wells have been drilled and more than 1,000 km of new seismic has been acquired and interpreted.

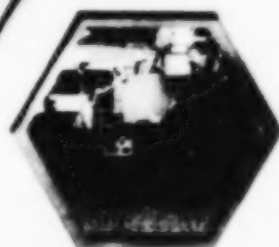
Future

The next few years will be important to Nova Scotia's onshore as new companies employing new ideas and technologies and more detailed seismic, including 3D, will be better able to define new targets. Application of slim-hole and horizontal drilling technology will minimize environmental impact and enable companies to validate newer play concepts.



Commitments

- Streamlined Approvals
- Public Consultation
- Regional Cooperation
- Improved Legislation



New Initiatives

In recognition of industry's desire to test the potential of onshore Nova Scotia, the Department of Energy has created an Energy Strategy which strives to encourage and facilitate industry's exploration activities. A number of initiatives have been implemented.

Technical Expertise

On the technical side, there is a strong commitment to improve the management of, and access to, technical data. The Department understands the importance of resident expertise in petroleum matters. Staff expertise and good working relationships with the resident geoscientific community help ensure access to needed resources.

The Department has contracted experts to evaluate the petroleum potential of selected areas; source rock studies and petroleum systems analyses of various basins have been conducted. A project to assess the petroleum potential of basin/subbasins in Cape Breton has been spearheaded by the DOE and was completed in August, 2004. This study assessed the geological and geochemical components of three distinct areas of Cape Breton with an emphasis on evaluating the petroleum potential of each area. The results of the study will help guide explorers to the most prospective areas on Cape Breton Island. These initiatives have and will continue to highlight the potential of a number of areas. An onshore seismic database is being developed with the GIS experts at the Department of Natural Resources (DNR) and will be available through a link to the DNR webpage early in 2005.

Regulatory Efficiency

The Department of Energy is committed to improving overall regulatory efficiency through a number of important initiatives:

Streamlined Approvals

The Department of Energy chairs the One-Window Standing Committee, which brings together all government departments involved in some manner with the ultimate approval of each program. This forum provides the opportunity to ensure all regulatory requirements have been identified prior to the commencement of any activity.

Public Consultation

Public consultation is often a condition of the activity authorization and may involve meetings, open houses, or simply notice of an activity in a particular area. It is important for the public to be able to discuss their concerns and ask questions. Department of Energy staff are present to answer any pertinent questions and provide assurance that industry is compliant with the regulations.

Regional Cooperation

The Department is currently working with neighbouring jurisdictions in Atlantic Canada to provide for more efficient industry operations across the region. Consideration is being given to common inspection and approval for various oilfield equipment, a single registry for seismic and drilling contractors, and standardization of approvals and time lines. Consistency would benefit companies and contractors operating in more than one of the Atlantic provinces.

Improved Legislation

Work is now underway to update the current *Petroleum Resources Act* and regulations to improve the administration and regulation of petroleum activity. The new legislation will reflect our commitment to encourage oil and gas activity. We will seek industry input on proposed changes. Less prescriptive regulations, the use of "good oilfield practice" and "equipment fit for purpose" are our chief criteria for operations. The land tenure system is also being examined.

In addition, we are considering an initial term of five years to allow for the extra time it takes to be in a drilling position in frontier areas such as Nova Scotia. We are moving to establishing our own Registry that will reduce time for processing applications and dealing with notices and refunds.

Conclusion

Nova Scotia has the right mix of flexibility and commitment needed to grow an oil and gas industry in our onshore. Given recent efforts by industry, new generation of seismic, creative drilling technology, new exploration strategies and government's commitment to facilitating industry's efforts, it is simply a matter of time until Nova Scotia becomes the next onshore producing province.



N.S. Department of Energy

**Bank of Montreal Building
Suite 400, 5151 George Street
PO Box 2664,
Halifax, Nova Scotia
B3J 3P7**

**Tel 902.424.4575
Fax 902.424.0528**

www.gov.ns.ca/energy

